



# State of Utah

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DIVISION OF OIL, GAS AND MINING

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**TO:** Internal File

**FROM:** Wayne H. Western, Senior Reclamation Specialist *W H W*

**RE:** Lion Deck Modified Reclamation Plan, Plateau Mining Corporation, Star Point Mine, C/007/006- AM02B-2

## SUMMARY:

In response to a Division letter dated May 8, 2002 requesting improved topographic mapping of the Lion's Deck area, Plateau Mining Corporation resubmitted an amendment application on May 10, 2002. The application includes improved topographic mapping, which more accurately depicts reclamation volumes and watershed definitions. The Division found some deficiencies and the Permittee responded in a submittal received on July 18, 2002

The amendment modifies the reclamation plan of the Lion's Deck area and the Permittee changed the reclamation plan for the conveyor belt access road. The State, Forest Service and Permittee own the surface of this area.

## TECHNICAL ANALYSIS:

## RECLAMATION PLAN

### APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-270, -301-271, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

### Analysis:

The requirements for the restoring a site to the approximate original contours is couched in the backfilling and grading requirements. To clarify the requirements that pertain directly to AOC the Division developed Technical Directive 002. The general requirements for restoring

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asite to AOC involve hydrology, the postmining land use and backfilling and grading.

The hydrology issues involve restoration of the drainage systems and sediment control. The drainage systems will be evaluated as part of the hydrology section. The sediment control issues are mostly done in the vegetation section. However, the slope shape does influence sediment control and will be partially addressed in this section.

The main concern that the Division has with the slope design is that the reclaimed slopes are mostly flat. Concave slopes usually provide better sediment control. The Permittee either needs to include concave slope designs into the reclamation plan or state why straight slopes will not produce increases in runoff or sediment loss.

The postmining land use requirements will be addressed in that section of the MRP.

The specific requirements of backfilling and grading are as follows:

- All Spoil Piles to be Eliminated
- Final Surface Configuration
- All Highwalls to be Eliminated

No spoil piles are located at the Lion Deck area. Therefore, the Permittee does not have to address this issue.

The main criterion for compliance with the final surface configuration requirement is, "Does the postmining topography, excluding elevation, closely resemble its premining configuration?" When answering that question the Division looks at the following two issues:

- The final grade of post-mining slopes shall not exceed approximate pre-mining slope grades and the post-mining slope will have a static safety factor of 1.3 or greater. The Division will take into consideration soil, climate and other pertinent characteristics of the surrounding area in evaluating the adequacy of final graded slopes.
- In arid or semi-arid areas, vegetation alone may not adequately control erosion on steep slopes. Therefore, the Division will closely evaluate the slope gradients of reclaimed areas to ensure effective erosion control.

The Permittee did not address the safety factor requirements for the post-mining slopes at the Lion Deck area. However, past slope stability analysis shows that slopes with angles as steep as 1.5H to 1 V (34°) will have a safety factor greater than 1.3. See the letter dated July 30, 1987 from Rollins, Brown and Gunnell Inc. to Ben Grimes in Exhibit 553.130a. In the letter the consultant states that slopes with angles of 1.5 H to 1.0 V will have safety factors greater than 1.3. In addition, in the approved reclamation plan for the Lion Deck area the post-mining backfilled slopes exceed 40° in some areas. See cross-section F-1 to F-1' on Map 542.200d1

that was incorporated May 27, 1998.

The information from the slope stability analysis indicates that the proposed post-mining slopes of 2H to 1V are gentler than those in the surrounding area and that the slope angles could be increase to 1.5H to 1V without affecting slope stability. By increasing the slope angle the Permittee could reduce or eliminate the cut slopes and highwalls.

The cut and fill calculations indicate that 1,178,377 cubic yards of cut material are available and 1,056,914 cubic yards of fill material is needed. The difference between the cut and fill requirement is 10%, which is the approximate accuracy of most earthwork calculations.

The Permittee is required to eliminate all pre-law highwalls unless they can show that either there is not enough reasonable available fill material or the reclaimed slope would not meet the minimum safety factor requirements.

The proposed reclamation plan for the highwall at the Lion Deck area is shown on cross-section E-E' on Map 542.200d2. The Permittee proposes to leave a 30-foot highwall. The limitation to full reclamation of the pre-SMCRA highwall is due to the Gentry Mountain road. The only way to place fill material high on the highwall is to increase the slope angle or move the Gentry Mountain road to a less stable surface.

The highwall backfill will have a slope of 1.8:1 at the steepest point. The backfill will consist of coal mine waste. The material could be placed at a steeper angle and still be stable. However, the Permittee must place a minimum of four feet of dirt over the backfill. The dirt will not be compacted. To avoid shallow surface failures and minimize erosion the slope angle should average 2:1. Since the slope will be concave, the Permittee will be able to increase the upper section of the backfill to 1.8:1. Therefore, the pre-SMCRA highwall will be reclaimed to the extent possible.

#### **Findings:**

The information provided in the amendment is considered adequate to meet the requirements of the AOC section of the regulations.

## **BACKFILLING AND GRADING**

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233.

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**Analysis:**

**General**

The general backfilling and grading requirements include the following:

- Achieve AOC
- Eliminate Highwalls, spoil piles and depressions
- Achieve a postmining slope that does not exceed either the angle-of-repose of such lesser slope a necessary to achieve a minimum long term static safety factor of 1.3 and prevent slides
- Minimize erosion and water pollution both on and off site
- Support the postmining land use.
- Disposal of coal processing waster and underground development waste
- Cover exposed coal seams, acid- and toxic forming materials
- Prepare final graded surfaces in a manner that minimizes erosion and provides a surface for replacement of topsoil that will minimize slippage.

The AOC standards, and the elimination of highwalls, spoil piles and depressions are addressed above in the AOC section.

The slope stability requirements were partially addressed in the AOC section and in the existing slope stability studies in Exhibit 553.130a of the MRP. In the July 18, 2002 submittal, the Permittee states that the angle-of-repose for the backfill material is 1.5 H to 1.0 V. The reclaimed slopes will not exceed the angle-of-repose.

The issues involving minimizing erosion and water pollution are addressed in the AOC section. The postmining land use issues are addressed in that section.

The disposal of coal processing waste and underground development waste is included in the MRP. The Permittee does not propose any changes to those plans.

The Permittee shows the location of the coal seams on the cross-sections on Map 542.200d2. The coal seams will be covered with a minimum of 40 feet of fill material.

**Previously Mined Areas**

Previously mined areas usually means areas that were mined and reclaimed or abandoned prior to the enactment of SMCRA. The provisions for previously mined areas include:

- Use of all reasonable available spoil for backfill
- The backfill shall be graded to a slope that is compatible with the approved postmining land use.

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- Any highwall remnant shall be stable and not pose a hazard to the public health and safety or to the environment. The operator shall demonstrate, to the satisfaction of the Division, that the highwall remnant is stable.
- Spoil placed on the outslope during previous mining operations shall not be disturbed if such disturbances will cause instability of the remaining spoil or otherwise increase the hazard to the public health and safety or to the environment.

Since the mine is an underground mine little if any spoil was generated. Therefore, the spoil handling requirements are not relevant. The highwall issues are addressed in the AOC section.

**Findings:**

The information provided in the proposed amendment is considered adequate to meet the requirements of the backfilling and grading section of the regulations.

**MINE OPENINGS**

Regulatory Reference: 30 CFR Sec. 817.13, 817.14, 817.15; R645-301-513, -301-529, -301-551, -301-631, -301-748, -301-765, -301-748.

**Analysis:**

The Permittee has committed to seal all mine openings according to the plan in the approved MRP. The Permittee did not state that they would make any changes the portal sealing plan in the proposed MRP.

**Findings:**

The Permittee has met the minimum requirements for this section of the regulations.

**ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES**

Regulatory Reference: 30 CFR Sec. 701.5, 784.24, 817.150, 817.151; R645-100-200, -301-513, -301-521, -301-527, -301-534, -301-537, -301-732.

**Analysis:**

**Reclamation**

On Page 500-80 of the approved MRP the Permittee states that a short access road

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between the conveyor rock tunnel and County Road 290 will remain upon reclamation. This road will continue to be used for power line access upon reclamation. However, on Map 542.200a received on February 14, 2002, that access road is shown to be reclaimed. Compare with Map 542.200a in the approved MRP, which shows the road to be retained upon final reclamation.

To avoid confusion the Permittee must either modify the text to show that the access road will be reclaimed or modify the backfilling and grading plan so that the road will remain.

**Retention**

The approved postmining land use includes the retention of County Road 290, which is a public road used to access Gentry Mountain and the Carbon County communication and relay facilities. The proposed reclamation plan for the also calls for the retention of County Road 290.

**Findings:**

The Permittee has met the minimum requirements for this section of the regulations.

**MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS**

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-323, -301-512, -301-521, -301-542, -301-632, -301-731.

**Analysis:**

**Final surface configuration maps**

The Permittee included cross-sections for the Lion Deck area at 200-foot intervals. Those cross-sections were adequate for the Division to make findings about backfilling and grading and AOC.

For bond release on a site the size of Star Point, the Division usually requires cross-sections on 200-foot intervals or less. Because the design cross-section will be compared to the as-built cross-sections, the Division needs the two sets of cross-sections to be at the same intervals. While the Division usually will not allow the Permittee to reduce the number of cross-sections, they will allow the Permittee to modify the location of the cross-sections for key locations.

**Findings:**

The information provided in the proposed amendment is considered adequate to meet the requirements of the reclamation maps and cross-sections requirements of the regulations.

**BONDING AND INSURANCE REQUIREMENTS**

Regulatory Reference: 30 CFR Sec. 800; R645-301-800, et seq.

**Analysis:**

**Determination of bond amount**

The Permittee has done a large amount of reclamation work at the site. The amount of reclamation work is enough to off site the additional yardage that will

*Terms and conditions for liability insurance*

**Findings:**

The Permittee has met the minimum requirements for this section of the regulations.

**RECOMENDATIONS:**

The Division should deny the amendment until the Permittee corrects the above-mentioned deficiencies.